Five-Year Review Report

Second Five-Year Review Report
for
Zanesville Well Field Site
City of Zanesville
Muskingum County, Ohio

September 2006

PREPARED BY:
United States Environmental Protection Agency
Region 5
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Approved by:

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for Superfund Division Director
United States Environmental Protection Agency

Date: 9/27/06

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Attachments

List of Acronyms

AOC	Administrative Order by Consent
ARAR	Applicable or Relevant and Appropriate Requirements
AS	Air Sparging
AS/SVE	Air Sparging/Soil Vapor Extraction
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Contaminant of Concern
CQAP	Construction Quality Assurance Plan
DCE	Dichloroethylene
EPA	Environmental Protection Agency
ERP	Enhanced Recovery Plan
ESD	Explanation of Significant Difference
FS	Feasibility Study
IC	Institutional Control
IRM	Interim Remedial Measure
MCL	Maximum Contaminant Levels
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
O&M	Operations and Maintenance
PCOR	Preliminary Close Out Report
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAO	Remedial Action Objectives
RC	Restrictive Covenant
RD	Remedial Design
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RL/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SOW	Statement of Work
SVE	Soil Vapor Extraction
TCE	Trichloroethylene
UECA	Uniform Environmental Covenants Act
UTA	United Technologies Automotive
VOC	Volatile Organic Compound
ZMWF	Zanesville Municipal Well Field

Executive Summary

The remedy for the Zanesville Well Field Superfund Site (the site) in Zanesville, Ohio included excavation of contaminated soils, groundwater monitoring, active groundwater restoration involving groundwater pump and treat, air sparging and insitu soil vapor extraction (SVE). The site achieved construction completion with the signing of the Preliminary Close Out Report (PCOR) on September 30,1996. The trigger for this five-year review was the signing of the first five-year report on September 27, 2001.

A protectiveness determination of the remedy could not be made at this time until further information is obtained. Further information will be obtained by taking the following actions: completion of the ERP, a vapor intrusion study and an institutional controls study. It is expected that these actions will take approximately twelve to fifteen months to complete, at which time a protectiveness determination will be made. This determination will be made in an addendum to the second five-year review in 2008.

Five-Year Review Summary Form

Site Identification

Site Name (From WasteLAN): Zanesville Well Field Site

EPA ID (From WasteLAN): OHD980794598

Region: Five	**State:** Ohio	**City/County:** City of Zanesville, Muskingum County

Site Status

NPL status: ☒ Final ☐ Deleted ☐ Other (specify): _____

Remediation Status (choose all that apply): ☐ Under Construction ☒ Operating ☒ Complete

Multiple OUs? ☐ Yes ☒ No	**Construction Complete date:** 09/30/1996

Has the site been put into reuse? ☒ Yes ☐ No

Review Status

Lead Agency: United States Environmental Protection Agency

Author Name: Sam Chummar

Author Title: Remedial Project Manager	**Author Affiliation:** US EPA Region 5

Review Period (Start and end dates in WasteLAN): 06/01/2006 **to** 09/30/2006

Date(s) of Inspection: 08/31/2006

Type of Review: ☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion)

Review Number: 2 (Second)

Triggering Action: Previous Five-Year Review

Triggering Action Date: 09/27/2001

Due Date: 09/27/2006

Five-Year Review Summary Form, Continued

Issues:

1. Groundwater
   a. The groundwater monitoring network is not clearly demonstrating containment.
   b. Rapid restoration of the groundwater aquifer has not been achieved.

2. A change in soil cleanup levels was not sufficiently documented.

3. A vapor intrusion (VI) study has not been completed for the site.

4. Institutional Controls
   a. A study of institutional controls has not been completed for the site
   b. Long-term stewardship of the site must be assured

5. Access Issues
   a. Access, by recreational users to discharge points on Muskingum River
   b. Access, by park visitors to wells W-6 and W-12 at the Municipal Well Field

Recommendations and Follow-up Actions:

1. Groundwater: the Enhanced Recovery Plan (ERP) will review and determine options for enhancement of the groundwater remedy system and groundwater monitoring system.
   a. Groundwater monitoring data from the enhanced monitoring network will be used in subsequent groundwater monitoring reports to clearly demonstrate whether groundwater contamination exceeding cleanup levels is being contained.
   b. The groundwater remedy system will be enhanced to improve the aquifer restoration timeframe.

2. Sufficient documentation will be issued for the change in soil cleanup levels.

3. A vapor intrusion study will be completed by United Technologies Automotive (UTA).

4. Institutional Controls:
   a. An institutional controls study will be completed to evaluate institutional controls and resulting follow-up actions will be completed by UTA and EPA.
   b. An IC Action Plan will be completed by EPA

5. Access Issues
   a. Steps will be taken in order to prevent direct contact with discharge points
   b. Steps will be taken in order to prevent interference with well pumps W-6 and W-12

Protectiveness Statement(s):

A protectiveness determination of the remedy could not be made at this time until further information is obtained. Further information will be obtained by taking the following actions: completion of the ERP, a vapor intrusion study and an institutional controls study. It is expected that these actions will take approximately twelve to fifteen months to complete, at which time a protectiveness determination will be made. This determination will be made in an addendum to the second five-year review in 2008.

Zanesville Well Field Site
City of Zanesville
Muskingum County, Ohio
Second Five-Year Review

I. Introduction

The purpose of five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify issues found during the review, if any, and recommendations to address them.

The Agency is preparing this five-year review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Contingency Plan (NCR). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The agency interpreted this requirement further in the National Contingency Plan; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The United States Environmental Protection Agency (EPA) Region 5 has conducted a five-year review of the remedial actions implemented at the Zanesville Well Field Site in Zanesville, Ohio. This review was conducted by the Remedial Project Manager (RPM) for the entire site from June 2006 through September 2006. This report documents the results of the review.

This is the second five-year review for the Zanesville Well Field Site. The triggering action for the policy review is the signing of the First Five-Year Review Report on September 27, 2001. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1 - Chronology of Site Events

Event	Date
Site used for manufacturing purposes	1893 - Present
Up to 121 drums containing trichloroethylene (TCE) solvent were placed inside a dug well on site	Early 1970s
Evidence of TCE contamination at the city of Zanesville's water supply Well Field	1981
Interim Remedial Measure to address impacted groundwater	July 1983
Site placed on the National Priorities List	09/08/1983
US EPA, Ohio EPA and UTA enter an Administrative Order by Consent (AOC) to perform a Remedial Investigation/Feasibility Study (RI/FS)	08/03/1988
RI/FS approved	07/10/1991
Record of Decision (ROD) signed	09/30/1991
Consent Decree (CD) to perform the Remedial Design/Remedial (RD/RA) entered	12/10/1992
Final RD Design Document approved	October 1995
Construction commenced	10/24/1995
Preliminary Close Out Report signed	09/30/1996
First Five-Year Review Report signed	09/27/2001

III. Background

Physical Characteristics

The Zanesville Well Field Site (the site) is located on the east and west banks of the Muskingum River in the City of Zanesville, Ohio. The east and west banks are connected via groundwater under the river. The site contains the southern portion of the water well field for the City of Zanesville and the former United Technologies Automotive, Inc. (UTA) Facility, the source of the contamination. The Zanesville Municipal Well Field (ZMWF) covers approximately 72 acres and is on a narrow strip of flood plain on the east bank of the river. The city currently pumps 5.5 to 6.0 million of gallons of water per day from 10 of the uncontaminated wells in the well field. Four of the city's production wells are no longer used for the water supply. Two of these wells (wells W-6 and W-12) are still contaminated and are being pumped as part of the remediation effort. One well that was contaminated (W-7) and one well that was never contaminated (W-8) are no longer being pumped to prevent migration of contamination to the clean wells used for the

public water supply. The former UTA Facility lies; on the west bank of the river directly across from the southern portion of the ZMWF. The former UTA facility and grounds cover an area of approximately 28 acres between the river and Linden Avenue.

Land and Resource Use

The property formerly occupied by UTA has been used for manufacturing purposes since 1893 when American Encaustic Tiling Company, a ceramic products manufacturer, constructed the original buildings. The site has had several owners since 1893. In 1974, UTA acquired the property from the Essex Corporation and operated at the site until ownership was transferred to the Lear Corporation who currently owns the building and property associated with the site. Residences are in close proximity to the former UTA Facility. Although residential use of the property is a possible future use of the property, Lear Corporation currently operates and plans to continue operation at the facility. The southern portion of the ZMWF is currently not being used as a source of water. After the restoration of the groundwater, this area of the well field could once again be used as a source of water.

History of Contamination

Due to the long history and varied usage of the site, many details of past waste storage and disposal practices are not available. However, it has been established that during American Encaustic's ownership of the site, a dug well 10 feet in diameter and 40 feet deep was installed. Over the years the dug well fell into disuse and in the early 1970's the well was backfilled Rubble from the demolition of a building, as well an estimated 121 drums containing trichloroethylene (TCE) solvents were placed inside the well.

Evidence of TCE contamination at the ZMWF was first observed in July 1981, during a random check for volatile organic compounds (VOCs) by the U.S. EPA. At that time TCE was detected in the plant tap at the City of Zanesville's water treatment plant. Three wells in the southern end of the well field were found to be contaminated with TCE and 1,2-dichloroethylene (DCE). In late 1981, the City of Zanesville was anonymously notified of the existence of the abandoned dug well at the UTA Facility, which reportedly contained drums of TCE-based solvents. The abandoned well is approximately 900 feet west of the river and directly across the river from the southern portion of the ZMWF.

Initial Response

In July 1983 UTA installed a groundwater extraction and treatment system at the site consisting of four groundwater extraction wells and an air stripper as an Interim Remedial Measure (IRM) to address impacted groundwater. At the same time UTA removed approximately 121 intact and fragmentary drums and contaminated debris from the old well and closed it. A soil vapor extraction system was implemented in 1985 to supplement the groundwater remediation system.

In September 1983 the site was placed on the National Priorities List (NPL). In August 1988 U.S. EPA, the Ohio EPA and UTA entered into an Administrative Order on Consent (AOC) to perform a Remedial Investigation/Feasibility Study (RI/FS). The R was completed in September

1990 and the FS approved in July 1991. A Record of Decision (ROD), dated September 30,1991, documented the remedial actions selected for the site.

Basis for Taking Action

Hazardous substances that have been released at the site in each media include:

Soil:

Aluminum	Chromium	Manganese	Zinc
Antimony	Copper	Mercury	
Barium	1,2-Dichlorethylene (DCE)	Trichloroethylene (TCE)	
Cadmium	Lead	Vanadium	

Groundwater:

Trichloroethylene (TCE)
1,2-Dichlorethylene (DCE)

Exposure to contaminated soil and groundwater are associated with significant human health risks, due to exceedances of EPA's risk management criteria for either the average or the reasonable maximum exposure scenarios. The risk was highest for exposures to groundwater due to the high concentrations of carcinogenic TCE and noncarcinogenic DCE that exceed State and Federal Maximum Contaminant Levels (MCLs) for drinking water. Risks from exposure to soils were significant due to the presence of carcinogenic TCE, DCE, and other noncarcinogenic hazards including high concentrations of lead and mercury.

IV. Remedial Actions

Remedy Selection

The ROD (September 30, 1991) documented the chosen remedial actions for the site. Remedial Action Objectives (RAOs) were developed as a result of data collected during the RI to aid in the development and screening of remedial alternatives to be considered for the ROD. The RAOs for the site were divided into the following:

1. Contain/capture contaminated groundwater and restore the aquifer by remediating contaminated groundwater to achieve groundwater clean up levels throughout the contamination plume;

2. Remediate source areas or prevent migration from source areas which cause groundwater to be contaminated in concentrations that exceed ARARs or risk-based levels;

3. Remediate soils to prevent contaminant migration to groundwater, or direct contact, ingestion, or inhalation with soils that contain contaminant concentrations in excess of MCLs, ARARs, or risk-based levels; and

4. Prevent inhalation of air which contains contaminant concentrations in excess of ARARs or risk-based levels.

The major components of the remedy selected in the ROD include the following:

1. Containment/capture of contaminated groundwater and restoration of the aquifer to clean up levels through groundwater pumping;
2. Treatment of contaminated groundwater by air stripping;
3. Treatment of soil and source areas contaminated with VOCs by in-situ soil vapor extraction; and
4. Treatment of soil contaminated with inorganic compounds by soil washing.

The remedial action components also included fence installation, pre-design studies, and yearly evaluation of the groundwater extraction system. In addition, the selected remedy included institutional controls such as property restrictions to control the future use of the UTA Facility until soil cleanup standards have been met and to control the use and placement of wells in the affected area until groundwater cleanup levels have been met.

Remedy Implementation

On December 10, 1992, a Consent Decree executed between UTA and U.S. EPA to perform the Remedial Design/Remedial Action (RD/RA) at the site was entered by the federal district court.

The RD Work Plan was approved on March 12, 1993. A series of Pre-Design Studies which included groundwater and soil sampling, pilot tests and contaminant transport modeling, were completed from May 1993 until November 1994. The Final Design Document was approved on October 18, 1995. Construction commenced on October 30, 1995.

Soil cleanup levels for organic chemicals of concern were specified in the ROD with the provision that the actual cleanup concentrations would be calculated once additional site specific data was collected during the pre-design phase. Soil cleanup levels for organic chemicals of concern were specified in the ROD with the provision that EPA may allow new cleanup concentrations to be calculated for individual chemicals as long as the overall soil cleanup level was met; i.e., contamination did not leach to groundwater above MCLs. During the early stages of the RD, modeling completed during the RI/FS was repeated with new assumptions, corresponding to new site specific information (the modeling completed during the RI/FS assumed that the initial concentration of organic contaminants in groundwater contacting contaminated soil was at MCLs; the modeling was repeated with the assumption that groundwater contacting contaminated soil was uncontaminated). The soil cleanup levels for organic chemicals of concern were modified in a letter, dated January 26, 1995, on the basis of this information.

Also modified in the letter were inorganic cleanup levels. The January 26, 1995 letter states that a UTA letter, dated November 30,1993, EPA soil screening guidance, dated December 1994, and the EPA Region 3 risk-based concentration table, fourth quarter 1994, were used to make the modifications. The manganese cleanup level was further modified in a letter dated February

13,1995, which states the background concentrations of manganese may be higher than the concentrations set in the January 26,1995 letter. After modification of inorganic cleanup levels for soil, it was estimated that the volume of soil requiring treatment under the modified soil cleanup levels would be less. As a result, treatment of inorganic soil contamination by soil washing was replaced with soil excavation and off site disposal of contaminated soil. This change in the soil remedy was approved in a letter, dated April 19, 1995, which approved the *30% Design Report for the Zanesville Well Field Site*. The method employed to document the change to the soil cleanup levels for inorganic chemicals of concern and the change from soil washing to excavation and off-site disposal is insufficient. This issue will be addressed in follow-up actions to this five year review.

The *Inorganic Soil Removal Work Plan* portion of the remedial design presented the methodology for completing the inorganic soil excavation. The excavation activities were completed in accordance with the specifications and methods outlined in the plan. The volume of soil to be excavated was estimated to be approximately 304 cubic yards. The actual volume of soil excavated to achieve the inorganic soil clean-up levels was approximately 1,880 cubic yards. Confirmation soil samples indicated that removal of inorganic impacted soils in excess of the modified soil clean-up levels had been achieved.

The results of the *Preliminary Pre-Design Data Report for the Organic Impacted Soils Investigation* did not identify any new source area of volatile organic compounds (VOCs). The only source areas identified were the Drum Storage Area and the northeast corner of the main building. As a result of this conclusion, a shallow soil vapor extraction (SVE) system was designed to focus on the Drum Storage Area and the northeast comer of the main building. The deep SVE system was designed to provide soil vapor extraction from the area of suspected deeper zone impacted soil and to provide for the extraction of vapors produced through operations of the air sparging system. Although not required in the ROD, UTA proposed air sparging (AS) as an enhancement to the required SVE system. An AS/SVE system was designed to remediate the organic impacted soils and groundwater. A total of 16 soil vapor extraction wells, five nested air sparging wells, 5,500 linear feet of conveyance piping and the AS/SVE equipment and equipment enclosure were constructed. The AS/SVE system was completed according to the technical specifications and design drawings presented in the *Final Design*. Based on the results of the AS/SVE Pilot Testing, the AS/SVE system is expected to achieve the modified clean-up standards.

The groundwater remediation system design was based on the results of groundwater modeling, groundwater sampling and analysis, the historical performance of the interim groundwater extraction and treatment system, and the results of the AS/SVE pilot test that was performed. The four existing groundwater extraction wells were incorporated into the final groundwater remediation system, as were two contaminated production wells for the ZMWF. The groundwater remediation system is expected to achieve the clean-up standards specified in the ROD. However, the groundwater remediation system has not met the goal of rapid restoration of the aquifer. Current modeling suggests that the time to achieve cleanup standards is approximately 20 years.

Construction activities at the site were consistent with the ROD and all work plans. A *Quality Assurance Project Plan* (QAPP) was approved on March 12, 1993, for all pre-design studies. All sample collection and analytical activities were conducted in accordance with the approved QAPP. The *Construction Quality Assurance Plan* (CQAP) was approved on October 12, 1995. Remedial Action (RA) work was conducted with U.S. EPA oversight. All construction activities were conducted in accordance with the approved CQAP.

System Operation/Operation and Maintenance

UTA is conducting long-term monitoring and maintenance activities according to the *Operation and Maintenance (O&M) Plan*.

The primary activities associated with the O&M include the following:

1. Inspection of conditions of groundwater monitoring wells, air sparging, SVE wells and groundwater extraction wells;
2. Environmental monitoring: biennial and yearly monitoring of the groundwater conditions; and
3. Maintenance on remediation systems: air sparge system, SVE system, and groundwater pump and treat system.

Institutional Controls

Institutional controls (ICs) are non-engineered instruments, such as administrative and legal controls that help to minimize the potential to exposure to contamination and that protect the integrity of the remedy. ICs are required to assure long-term protectiveness for any areas which do not allow for unlimited use or unrestricted exposure (UU/UE).

The ROD requires ICs to be implemented during remediation to assure protection until a health based clean-up has been achieved. Section III. B of the Statement of Work ("SOW"), Appendix B of the Consent Decree, sets forth the following requirements for ICs at the Site: "[UTA] shall implement the deed restrictions in Attachment I to prohibit the use of contaminated groundwater underlying the UTA facility, the adjacent railroad and the City of Zanesville Well Field until groundwater performance standards are met; to prohibit disturbance of the UTA facility until soil performance standards have been met; and to prohibit interference with remedial action components." Attachment 1 to the SOW sets forth specific land and groundwater use restrictions for the site.

In a letter to EPA, dated January 11, 1993, UTA stated that "a certified copy of the Consent Decree, an access agreement on behalf of United Technologies Automotive, Inc., and the Declaration of Restriction on Use of Real Property were recorded with the Muskingum County Recorder on December 23,1992." Since 1992, significant changes have occurred that warrant a study of ICs at the site. The State of Ohio recently enacted the Ohio Uniform Environmental Covenants Act ("UECA") which allows the creation of enforceable environmental covenants that run with the land. See, ORC §§5301.80-5301.92. In addition, the extent of residual soil and groundwater contamination at the site has changed since UTA recorded a declaration of restrictions in 1992 because of the implementation of the cleanup remedy. Therefore, EPA has

requested UTA to conduct a study of the ICs for the site. The IC study will evaluate the existing proprietary controls and encumbrances at the site, evaluate and describe areas not meeting soil or groundwater standards that require ICs, propose draft environmental covenants consistent with the UECA, and propose modifications to the Operation and Maintenance Plan for routine monitoring of compliance with use restrictions in restricted areas of the site.

Also, EPA will create an IC Plan which will include steps necessary to ensure that effective ICs are implemented and maintained. The plan will include the ongoing IC study to ensure that effective ICs have been implemented for the site as well as include provisions for long-term stewardship.

V. Five-Year Review Process

Administrative Components

The Zanesville Well Field Second Five-Year Review team included Sam Chummar, EPA's Remedial Project Manager (RPM) for the site and Michael D. Sherron, Ohio EPA's Site Coordinator for the site. EPA notified the Ohio EPA, site community involvement coordinator, Region 5 Five-Year Review Coordinator, and a representative from UTA in a letter, dated October 25, 2005, that the five year review process had begun. A public notice was placed in the July 29, 2006 edition of the Zanesville Times Recorder. The Ohio EPA and the Region 5 Five-Year Review Coordinator were provided a draft of this Five-Year Review in August 2006. Their comments have been incorporated into this report. In addition, UTA provided information which has been incorporated into this report.

Document Review

This five-year review considered relevant documents including: the site ROD, the First Five Year Review, Remedial Action Construction Report, O&M Plan and groundwater monitoring data. Applicable groundwater cleanup standards, as listed in the ROD were reviewed, as were post-ROC) soil cleanup levels listed in the Remedial Action Construction Report. RAOs were obtained from the ROD.

Data Review/Groundwater Monitoring

Groundwater monitoring has been conducted at the site since the early 1980s. In general, the highest concentrations of contamination were observed during the first few years of the initial response (1983 to 1986). The TCE plume is located in the upper and middle portions of the Muskingum River Buried Valley Aquifer. On the UTA Facility side of the river, the highest concentrations of TCE are in the upper aquifer, while on the ZMWF side, the highest concentrations of TCE are in the middle portion of the aquifer. Trends show that TCE and DCE are decreasing in a majority of the wells.

UTA's groundwater monitoring reports do not fully demonstrate the capture of the contaminant plume. This uncertainty is due to a lack of data density north of ZMWF well W-12, which causes a lack of confidence in the conclusion that the pumping of W-12 is containing the contaminants

(i.e. preventing the spread of contaminants). Methods to better demonstrate the capture of the target contaminant plume have been identified during the review of the Enhanced Recovery Plan (ERP), and will be implemented.

Site Inspection

A site inspection was conducted on August 31, 2006. Areas of concern at both the UTA Facility and the ZMWF were traversed with Ohio EPA Site Coordinator, Michael D. Sherron, a representative of UTA, Beth Lang, and UTA's contractor, John McInnes. A modified version of the 5 Year Review Site Inspection Checklist was used as part of the inspection and is contained in Attachment 3. No significant issues have been identified regarding the condition of the groundwater extraction wells, groundwater monitoring wells, air sparging wells, the SVE wells or the fence, except some damaged casings, missing locks and caps.

Two access issues were identified as a result of the site inspection. Access to the ZMWF wells is unrestricted because it is a park. Park goers can easily gain access to the pumps via ladders affixed to the platforms which the pumps sit upon (see Figure 1 located in Attachment 5). Interference to the remedy is possible, though unlikely, and discussions are taking place to address this issue. Secondly, the Ohio Department of Natural Resources (ODNR) installed a boat ramp at the entrance to the ZMWF. Boaters who travel a short distance upstream would have access to the outfalls where UTA discharges treated and untreated groundwater being pumped as part of the remedy (see Figure 2 located in Attachment 5). Discussions are also underway to restrict access to outfalls.

On August 31, 2006, EPA also visited the local site repository at the Muskingum County Library. EPA checked the local site repository files and found them to be in order.

Interviews

There has been low community interest in this site. This low community interest in this site is supported by the fact that neither the RPM nor the CIC has been contacted by the community in the past years. In addition, no community members responded to the five-year review public notice that invited readers to contact the CIC or the RPM for more information on the five-year review process. Therefore, no interviews were conducted with parties connected with the site.

Community Notification and Involvement

The *Comprehensive Five-Year Review Guidance* states that the community should be notified when a Five Year Review is being conducted. In accordance with guidance, a public notice was placed by EPA in the Saturday, July 29, 2006 edition of the Zanesville Times Recorder announcing the Five-Year review. A copy of the public notice is located in Attachment 4. The public notice described the Zanesville Well Field Site, stated that a five-year review of the cleanup was being conducted by EPA, and that the public could participate in the process. No comments were received in response to the public notice. EPA will provide the public with a notice of completion of this five-year review. In addition, a copy of the completed five-year review report will be provided to the local site repository.

VI. Progress Since Last Five-Year Review

This is the second five-year review for the site. The first five-year review determined the remedy would be protective after the cleanup levels were achieved for both groundwater and soil while citing similar issues with the groundwater remedy that this five-year review has identified. The first-five year review recommended an ERP be prepared for the site, which would address all the issues cited. The ERP has not been finalized yet. The draft ERP identified the following: methods of optimization for the groundwater extraction system and a timeframe of 18-20 years to achieve groundwater cleanup levels. EPA's recent review of the ERP identifies methods to demonstrate containment of target levels by the remediation system.

VII. Technical Assessments

***Question A**: Is the remedy functioning as intended by the decision documents?*

The review of documents, ARARs, risk assumptions, and the results of the site inspection indicates that a majority of the remedy is functioning as intended by the ROD.

Soil excavation minimized the migration of inorganic contaminants to groundwater and surface water, and prevents direct contact with, inhalation, or ingestion of inorganic contaminants in soil. The AS/SVE system is removing volatile organics from the soil. The groundwater pump and treat system did not achieve cleanup standards within ten years as predicted by an early groundwater model, but is removing contamination from the area, with decreasing levels of contamination documented in a majority of wells. Regular O&M has been maintaining the current effectiveness of the remedy.

The groundwater remediation, originally expected to be complete within ten years, is now estimated to take an additional 18 to 20 years assuming enhancements to the groundwater remediation system are made. Although initial models of the groundwater remediation system indicated that a rapid restoration was possible (four years for the ZMWF side of the river and ten years for the UTA side), projections from the draft ERP suggest that the initial timeframe was grossly underestimated. The underestimation may have occurred due to an underestimation of the source term in the original model, or overestimation of contaminant extraction, or more simply, the inadequacies of model algorithms of that era. Because there was no significant decrease in TCE and DCE concentration levels over a two-year consecutive period, an ERP was required. The draft ERP has not yet been approved by EPA. The draft ERP sets forth options for optimization of the groundwater remediation system's performance and for improvement of groundwater monitoring.

Improvements to groundwater monitoring are needed because the current monitoring network does not fully demonstrate containment of the target contaminants TCE and DCE. There is a lack of monitoring wells between contaminated observation wells and clean production wells for the City. Therefore, if groundwater contamination spreads, contamination of a production well for the City might occur without any prior indication by the current monitoring system. Further, several of the water level data sets analyzed do not provide substantial evidence of drawdown, due to the pumping of City Wells W-6 and W-12, which is needed to demonstrate hydraulic

capture, i.e. it is unclear if the pumping of wells W-6 and W-12 are drawing groundwater from the extent of contamination on the ZMWF side of the Muskingum River. Without a clear demonstration that the contaminants are being contained, EPA is unable to determine whether the remedy is protective of human health and the environment.

The effectiveness of institutional controls is currently being studied. Affected properties are depicted in Attachment 2. On August 1, 2006, EPA requested that UTA submit an institutional controls study report. The institutional controls study report is expected to be completed by November 1, 2006. The study will evaluate the existing proprietary controls and encumbrances at the site, evaluate and describe areas not meeting soil or groundwater standards that require ICs, propose draft environmental covenants consistent with the UECA, and propose modifications to the Operation and Maintenance Plan for routine monitoring of compliance with use restrictions in restricted areas of the site. Once EPA reviews and approves the study, steps will be taken to ensure institutional controls for the site are implemented and maintained.

Question B*: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of remedy selection still valid?*

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. Land uses on both sides of the river have not changed and expected uses of both properties have not changed since the selection of the remedy. Exposure assumptions and pathways evaluated during the remedy selection are still valid however vapor intrusion was not considered during the remedy selection. TCE and DCE, which are volatile organic chemicals (VOCs), contaminated soil and groundwater in close proximity to an existing building. VOCs from soil and groundwater in proximity to buildings have been known to vaporize and enter buildings through cracks, spaces, or by permeating through the foundation materials of those buildings. VOCs discovered in close proximity to a building is sufficient information to trigger additional investigation as prescribed in the *OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils*. This pathway should be evaluated to ensure the remedy is comprehensive and protective Cleanup levels for groundwater have not changed, are still consistent with National Primary Drinking Water Standards, and are consequently considered still protective.

Soil cleanup levels were modified during the initial stages of the RD, and fall into two categories: risk-based and leaching-based. The ROD provides soil cleanup levels for TCE and DCE based upon potential for leaching into groundwater at levels higher than the MCLs. Modeling that took place during the RD utilized assumptions reflective of site conditions and allowed for less stringent cleanup levels while still satisfying RAOs. New cleanup levels were issued in a letter, dated January 26,1995. These modified criteria for organic COCs are consistent with the intentions of the ROD and are also considered protective of the environment. Inorganic chemicals of concern (COCs) fall into the risk-based category. ROD soil cleanup levels for inorganic COCs at the site were determined based on a risk calculation. However, no record of a risk calculation for the modified soil cleanup levels were located during the five-year review. Without a risk calculation of the modified soil cleanup levels, a determination of the protectiveness of the modified soil cleanup levels cannot be made at this time. The appropriate

documentation for the modification of the soil cleanup levels should be completed in order to provide the information needed to make a protectiveness determination.

There has been no change to toxicity data of parent contaminants (TCE & DCE), but daughter products (e.g. vinyl chloride) were not considered as contaminants of concern (COCs) in the ROD. Sporadic detection of daughter products has been observed. However, since no consistent detection has been observed at any location, daughter products are still not being considered as COCs. Should monitoring reveal consistent detection at any location of any daughter product, it should then be considered a COC, and an evaluation should be made to determine if the current remedy is able to address the new COC. RAOs at the site are still valid.

Question C: *Has any other information come to light that could call into question the protectiveness of the remedy?*

No other information has come to light that could call into question the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed and the site inspection, much of the remedy is functioning as intended. However, rapid restoration of the groundwater aquifer, a goal of the ROD, has not been achieved. Restoration of the groundwater aquifer using the current remediation system has been estimated to take an additional 20 years. In addition, containment of groundwater contamination plume, another objective of the ROD, has not been clearly demonstrated. Biennial reports received from UTA do not demonstrate capture due to a lack of monitoring wells on the ZMWF side of the river.

RAOs and exposure pathways are still valid. However, vapor intrusion has not been considered as an exposure pathway. TCE and DCE are VOCs, and they contaminate soil and groundwater in close proximity to an existing building at the site. VOCs from contaminated soil and groundwater in proximity to buildings have been known to vaporize and enter buildings through cracks, spaces, or by permeating through the foundation materials of those buildings. This pathway has been found complete at some older Superfund sites with volatile organic compounds because the vapor intrusion pathway was not evaluated during investigations that took places. Not until recent years has it been common practice to evaluate the vapor intrusion pathway. In addition, adequate documentation was not provided for the decision to change the soil cleanup levels. Without this documentation, a determination of whether the cleanup levels for inorganic COCs are protective cannot be made.

VIII. Issues

Table 2 - Issues

Issue Number	Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1a	Groundwater monitoring network is not clearly demonstrating containment.	N	Y
1b	Rapid restoration of groundwater aquifer has not been achieved.	N	Y
2	A change in soil cleanup levels was not sufficiently documented	Y	Y
3	Vapor Intrusion was not studied as a possible pathway.	Y	Y
4a	The effectiveness of institutional controls requires study because of changes since their implementation in 1992	N	Y
4b	Long-term stewardship of the site must be assured	N	Y
5a	Direct access to discharge points	Y	Y
5b	Direct access to wells W-6 and W-12	Y	Y

IX. Recommendations and Follow-Up Actions

Table 3 - Recommendations and Follow-Up Actions

Issue Number	Issues	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects protectiveness (Y/N)	
						Current	Future
1a	Monitoring network not clearly demonstrating containment	ERP to be completed and implemented.	UTA	EPA	12/2007	N	Y
1b	Rapid restoration of groundwater aquifer not achieved	ERP to be completed and implemented.	UTA	EPA	12/2007	N	Y
2	Proper documentation	Determine and complete proper documentation	EPA	--	12/2007	N	Y
3	Vapor Intrusion pathway	Study to be completed	UTA	EPA	12/2007	Y	Y
4a	Effectiveness of institutional controls.	Study to be completed and follow-up actions implemented.	UTA	EPA	12/2007	N	Y
4b	Long-term stewardship	Complete IC Action Plan	EPA	--	04/2007[1]	N	Y
5a	Direct access to discharge points	Steps will be taken in order to prevent direct contact with water discharging from wells	UTA	EPA	12/2007	Y	Y
5b	Direct access to W-6 and W-7	Steps will be taken in order to prevent interference with well pumps on W-6 and W-12	UTA	EPA	12/2007	Y	Y

1 Completion of the IC Action Plan by EPA is dependent on the completion of other items including the IC study, the vapor intrusion study, and the resolution of issues related to the soil cleanup levels. It is unlikely that all of these items will be completed by the IC Action Plan milestone date of April 2007. Therefore, the milestone date is likely to be extended.

X. Protectiveness Statement

A protectiveness determination of the remedy could not be made at this time until further information is obtained. Further information will be obtained by taking the following actions: completion of the ERP, a vapor intrusion study and an institutional controls study. It is expected that these actions will take approximately twelve to fifteen months to complete, at which time a protectiveness determination will be made. This determination will be made in an addendum to the second five-year review in 2008.

XI. Next Review

An addendum to the second five-year review will be completed in 2008 in order to make a protectiveness determination. The next five-year review for the Zanesville Well Field Site is required by September 2011, five years from the date of this second five-year review.

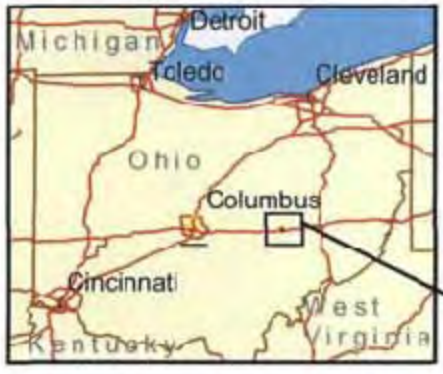
Attachment 1 - Site Location

Site Location

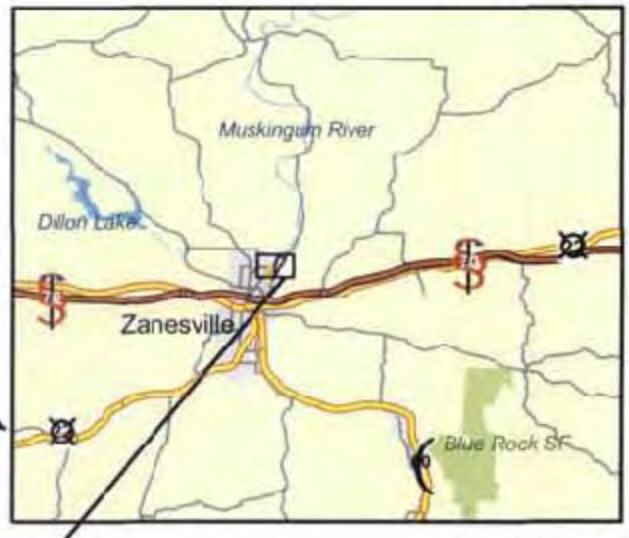
Superfund
U.S. Environmental Protection Agency

Zanesville Well Field
Muskingum County, OH

OHD980794598



State



County

Site

Figure 1

Created by Sarah Backhouse
U.S. EPA Region 5 on 8/24/06

L

GEOS

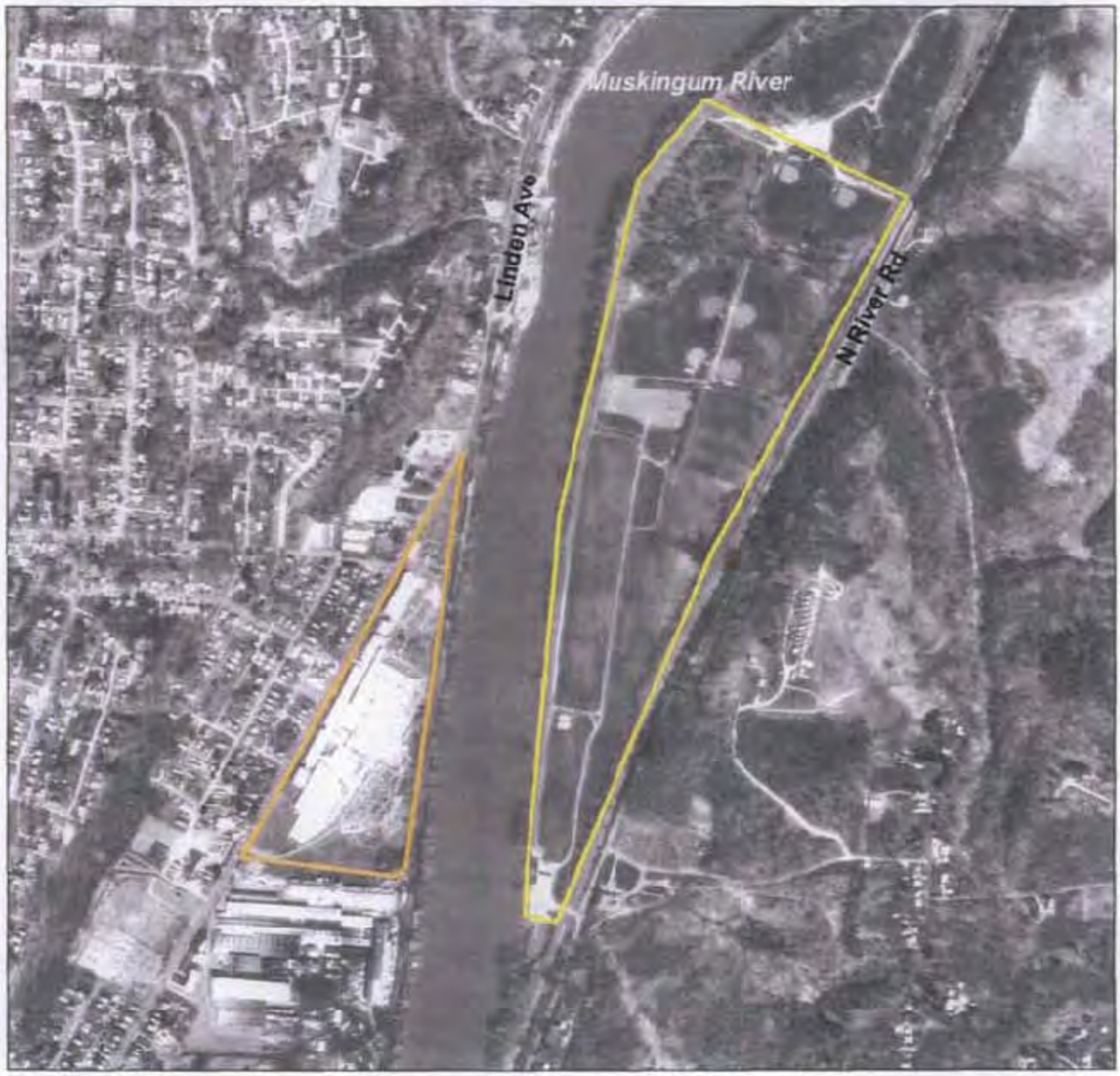
Attachment 2 - Site Properties

Institutional Control (IC) Review
Site Base Map

Superfund
U.S. Environmental Protection Agency

Zanesville Well Field
Muskingum County, OH

OHD980794598



Legend

- UTA Building
- Zanesville Well Field

0 500 1,000 Feet

N

GEOS

RPM: Sam Chummar

Created by Sarah Backhouse
U.S. EPA Region 5 on 5/11/06

Attachment 3 - Inspection Checklist

5 Year Review Site Inspection Checklist

I. SITE INFORMATION	
Site name: Zanesville Well Field	**Date of inspection:** 08/31/2006
Location and Region: Zanesville Ohio, Region 5	**EPA ID:** OHD980794598
Agency, office, or company leading the five-year review: US EPA	**Weather/temperature:** Cloudy, 60s - 70s

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☒ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other: Air Sparging/Soil Vapor Extraction
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** _____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

2. **O&M staff** _____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

5 Year Review Site Inspection Checklist

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached _____
_____

4. **Other interviews** (optional) ☐ Report attached.

5 Year Review Site Inspection Checklist

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - ☒ O&M manual — ☒ Readily available — ☐ Up to date — ☐ N/A
   - ☒ As-built drawings — ☒ Readily available — ☐ Up to date — ☐ N/A
   - ☒ Maintenance logs — ☒ Readily available — ☐ Up to date — ☐ N/A
   - Remarks

2. **Site-Specific Health and Safety Plan** — ☒ Readily available — ☐ Up to date — ☐ N/A
   - ☒ Contingency plan/emergency response plan — ☒ Readily available — ☐ Up to date — ☐ N/A
   - Remarks

3. **O&M and OSHA Training Records** — ☒ Readily available — ☐ Up to date — ☐ N/A
   - Remarks

4. **Permits and Service Agreements**
   - ☐ Air discharge permit — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Effluent discharge — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Waste disposal, POTW — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Other permits — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Remarks

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Remarks

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Remarks

7. **Groundwater Monitoring Records** — ☒ Readily available — ☐ Up to date — ~~N/A~~
   - Remarks

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Remarks

9. **Discharge Compliance Records**
   - ☐ Air — ☐ Readily available — ☐ Up to date — ☒ N/A
   - ☐ Water (effluent) — ☐ Readily available — ☐ Up to date — ☒ N/A
   - Remarks

10. **Daily Access/Security Logs** — ☐ Readily available — ☐ Up to date — ☒ N/A
    - Remarks

5 Year Review Site Inspection Checklist

IV. O&M COSTS

1. **O&M Organization**
   - ☐ State in-house
   - ☐ Contractor for State
   - ☐ PRP in-house
   - ☐ Contractor for PRP
   - ☐ Federal Facility in-house
   - ☐ Contractor for Federal Facility
   - ☐ Other _____

2. **O&M Cost Records**
   - ☐ Readily available ☐ Up to date
   - ☐ Funding mechanism/agreement in place
   - Original O&M cost estimate _____ ☐ Breakdown attached

   Total annual cost by year for review period if available

   From _____ (*Date*) To _____ (*Date*) _____ (*Total cost*) ☐ Breakdown attached
   From _____ (Date) To _____ (Date) _____ (Total cost) ☐ Breakdown attached
   From _____ (Date) To _____ (Date) _____ (Total cost) ☐ Breakdown attached
   From _____ (Date) To _____ (Date) _____ (Total cost) ☐ Breakdown attached
   From _____ (Date) To _____ (Date) _____ (Total cost) ☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs During Review Period**
   Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A
   Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A
   Remarks _____

5 Year Review Site Inspection Checklist

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No ☐ N/A
Other problems or suggestions: ☐ Report attached

_____
_____
_____
_____

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A
Remarks _____
_____
_____

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☒ No vandalism evident
Remarks _____
_____

2. **Land use changes on-site** ☒ N/A
Remarks well field is now a park.
_____

3. **Land use changes off site** ☐ N/A
Remarks _____
_____

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable ☒ N/A

1. **Roads damaged** ☐ Location shown on site map ☐ Roads adequate ☐ N/A
Remarks _____
_____

5 Year Review Site Inspection Checklist

B. Other Site Conditions

Remarks

IX. GROUNDWATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ☒ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   ☐ Good condition ☒ All required wells properly operating ☒ Needs Maintenance ☐ N/A
   Remarks Some well casings in need of repair

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☒ Good condition ☐ Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   ☒ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps, and Electrical**
   ☐ Good condition ☐ Needs Maintenance
   Remarks

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   ☐ Good condition ☐ Needs Maintenance
   Remarks

3. **Spare Parts and Equipment**
   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
   Remarks

5 Year Review Site Inspection Checklist

C. Treatment System ☒ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
   - ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
   - ☒ Air stripping ☒ Carbon adsorbers
   - ☐ Filters
   - ☐ Additive (*e.g.*, chelation agent, flocculent)
   - ☐ Others
   - ☒ Good condition ☐ Needs Maintenance
   - ☐ Sampling ports properly marked and functional
   - ☐ Sampling/maintenance log displayed and up to date
   - ☒ Equipment properly identified
   - ☐ Quantity of groundwater treated annually
   - ☐ Quantity of surface water treated annually
   - Remarks

2. **Electrical Enclosures and Panels** (properly rated and functional)
   - ☐ N/A ☒ Good condition ☐ Needs Maintenance
   - Remarks

3. **Tanks, Vaults, Storage Vessels**
   - ☒ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance
   - Remarks

4. **Discharge Structure and Appurtenances**
   - ☐ N/A ☐ Good condition ☒ Needs Maintenance
   - Remarks grate covering stripper discharge and outfall - could use some support

5. **Treatment Building(s)**
   - ☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair
   - ☒ Chemicals and equipment properly stored
   - Remarks

6. **Monitoring Wells** (pump and treatment remedy)
   - ☐ Properly secured/locked ☐ Functioning ☒ Routinely sampled ☐ Good condition
   - ☐ All required wells located ☒ Needs Maintenance ☐ N/A
   - Remarks some need locks, some need maintenance

D. Monitoring Data

1. Monitoring Data
   - ☒ Is routinely submitted on time ☐ Is of acceptable quality

2. Monitoring data suggests:
   - ☐ Groundwater plume is effectively contained ☒ Contaminant concentrations are declining

5 Year Review Site Inspection Checklist

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ All required wells located ☐ Needs Maintenance ☒ N/A
   Remarks

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy includes SVE and pump and treat. Both mechanisms seem to be working, though the SVE system needs some maintenance. The two wells that need servicing are close to reaching criteria so they ~~may~~ need ~~not~~ to be fixed for confirmation sampling. SVE wells are under pavement, so they could not be inspected but treatment shelter was in good condition and mechanisms were functioning.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

5 Year Review Site Inspection Checklist

C.	Early Indicators of Potential Remedy Problems
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. There are a couple access issues: 1) City wells are accessible. - The wells part of the remedy are easily accessible, ~~and~~ to the public, and interference is possible 2) Out falls - ODNR installed a boat ramp upstream and that could lead to boaters and swimmers near the outfall.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Attachment 4 - Public Notice

8/8/06

Ran:
SAT. 4/29/06
Zanesville Times Recorder...

EPA Reviewing Cleanup of Zanesville Well Field Site

Zanesville, Ohio

U.S. Environmental Protection Agency Region 5 is conducting a review of the cleanup performed at the Zanesville Well Field site in Zanesville, Ohio. Reviews are done at least every five years as part of the Superfund law to ensure the site cleanup continues to protect human health and the environment. The site includes the former United Technologies facility located on Linden Avenue west of the Muskingum River and the Zanesville municipal well field across the river from the industrial area.

A common industrial solvent called trichloroethylene (TCE) contaminated three of the city's drinking water wells in the early 1980s. Those three wells were closed as a drinking water source. The cleanup processes constructed at the site in 1997 included pumping and treating polluted underground water supplies (ground water), removing metal-contaminated soil and removing TCE and other chemicals from the ground through a soil-vapor extraction system. The ground-water treatment and soil-vapor extraction systems are still operating, and regular monitoring is being performed to ensure ground-water contamination is not spreading to other city wells. The last review of the site was done in 2001 and found the ongoing cleanup was protecting people and the environment. During the 2001 review, a plan to improve the ground-water cleanup was started, and EPA estimates that plan will be finished next summer.

The current five-year review includes a site inspection and review of documents and monitoring data to make sure the cleanup systems are still working. The latest five-year review report will be available at the Muskingum County Library by Nov. 1. The public can participate in the process by making comments or asking questions about the review. These EPA employees can be contacted:

Sam Chummar or **Rafael P. Gonzalez**
EPA Remedial Project Manager — EPA Community Involvement Coordinator
chummar.sam@epa.gov — gonzalez.rafaelp@epa.gov.
Region 5 toll-free: (800) 621-8431, weekdays 10 a.m. – 5:30 p.m.

More details about the cleanup are contained in an EPA fact sheet and technical documents available at the **Muskingum County Library,** 220 N. Fifth St., Zanesville.

3535280

Attachment 5 - Photos from Site Visit

Figure 1. City Well W-12. Pump is located on top of platform.

Figure 2. Discharge from City Well W-12